

**Clay Buescher, Connor Piero, Teddy Welsh, Brandon Parks, Sammy Weidenthal**

University School-Dr. Sara Laux, Director of Research

**A Bird’s Eye View**

Migration is essential for the survival of many bird species. Unfortunately, 50% of birds don’t make it to their destination. One reason for high mortality is window-bird collisions. Birds collide with windows because they are drawn to the reflection of the surrounding landscape or light emitted at night. These collisions contribute to the loss of biodiversity in songbird populations. Maintaining biodiversity is important to preserve ecosystem functioning. This study aimed to document window collisions on our school’s campus during fall migration, identify high frequency collision zones, and make recommendations for prevention. It was hypothesized that more collisions would occur on north facing windows positioned along the fall migratory path. Data were collected using a systematic survey and citizen science project to encourage student involvement. Nine species of birds collided with windows, 32 in total. The hermit thrush (n=5), Swainson’s thrush (n=4), and golden crowned kinglet (n=3) hit most frequently. The windows with the highest collision frequency were east facing. These data did not support our hypothesis. Instead, the reflection of the landscaping around the windows is thought to be the major cause. Small adhesive patterned decals will be applied to break the reflection, preventing collisions.

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**Emma Reding and Clair Mialky**

Granville High School-Jim Reding, Science Teacher

**An Investigation of Propagation Methods for the Reintroduction of Eradicated Eelgrass**

This presentation will outline the various experimental models and best practices we incorporated to propagate eelgrass in controlled environments, concluding with the reintroduction of eelgrass into a restored wetland (Granville Exempted Village School District Land Lab). We tested the input of current, various growth mediums, and the effects of other animals (fish) on growth.

**Addy Kendle, Elizabeth Dorsey, Amber Albritton, Jordynne Weese**

 New Philadelphia High School-Kip Brady, Science Teacher

**Distribution of Blacklegged Ticks and *Borrelia burgdorferi* prevalence, Tuscarawas County, Ohio**

The Blacklegged (Deer) Tick (*Ixodes scapularis*) has experienced a dramatic geographic range expansion across eastern North America over the past decade. In eastern North America, *I. scapularis* is the only known vector for *Borrelia burgdorferi*, the etiologic agent of Lyme Disease, so understanding the ecological factors contributing to *I. scapularis* abundance and *Borrelia burgdorferi* prevalence has important implications for human and ecosystem health. We examined the distribution of *I. scapularis* and *B. burgdorferi* prevalence across 21 locations in Tuscarawas County, Ohio. *B. burgdorferi* prevalence averaged 49% across all sites, with a trend toward higher prevalence rates in the southern and eastern parts of the county. Prevalence rates within tick populations ranged from 0 to 73%, suggesting potential landscape factors driving *B. burgdorferi* prevalence, and further testing is necessary to identify how landscape shapes tick density, pathogen prevalence, and disease risk. Our results indicate that *B. burgdorferi* prevalence in Tuscarawas County, Ohio is similar to regions where the pathogen is historically considered endemic and warrants upgrading this region's disease risk status.

**Brady Tindall**

Delaware Area Career Center-Dona Rhea, Instructor

**What Are the Social Interactions Between Three Red Harvester Ant Colonies?**

Most insect behavior research has been completed on the orthoptera order of insects which includes grasshoppers and crickets. This study used red harvester ants, which are social insects in the hymenoptera insect order, to study insect behavior. Ants need studied because they have short life cycles and are excellent pollinators in Ohio. The two vital ant tasks that this study observed in documenting their behaviors included detecting food sources and transporting the food back to the nest. Entomologists define and describe ant behavior as the actions exhibited while detecting and transporting food as the ant’s personality. In this study, ant behavior and ant personality can be referenced as the same meaning. The purpose of my experiment was to find out how red harvester ant colonies would behave as they interact with each other. Procedures in this study included having three red harvester ant colonies. These colonies were put into three different farms and after one week these ant colonies were introduced to one another to observe their behavior. My study hypothesis predicted that the ant behaviors observed while the ants were socializing would be two things: (1) fighting for space and (2) dominance among the ant colonies. Ant behavior was documented at both the individual and colony levels. Study results concluded that when combining harvester ant colonies, the ants took in each other’s colonies, rather than fighting. The hypothesis was proven to be wrong in my study. As ants act as pollinators to low-growing and closely grouped flowers, because they are constantly exploring and investigating different flowers, future studies should use different ant species and the same procedures to determine if Ohio’s native ants can take in each other’s colonies and thrive.

**Juliella Hankinson**

Hankinson Home Academy-Bethany Hankison, Parent/Homeschool Teacher

**A Study of Chloride Retention Levels from Excess Use of Road Salt in Wolf Run Tributary in Comparison to Kokosing River Levels**

Three wetlands were compared to determine how age of wetland affects the ability of each wetland to remove excess phosphorus. As snow blows in drifts over the roads, large trucks, full of salt, drive slowly and carefully over them, laying down salt as they do so. Road salt is often applied to roads in winter to lower freezing levels of precipitation, causing ice and snow to melt, clearing off the roads. Afterwards, salt is washed off roads into soil and nearby waterways. The goal of this study is to determine and compare the level of road salt at Wolf Run, a tributary of the Kokosing River in Knox County, Ohio and the area downstream from where the tributary feeds into the river. Chloride levels were tested using Quantab Chloride test strips and compared to results obtained 2021-2022 for a separate study at the same locations. Macroinvertebrates, wildlife, and any changes in the stream and streambank were documented. Results possibly indicate higher chloride levels in the second year of testing the tributary and river for previous measurements of temperature and water level. Additionally, this study affirms the hypothesis that tributaries; such as Wolf Run, with lower levels of water than rivers may be the first to exhibit signs that the overall water system is in danger of becoming overloaded with salt.